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BURROWING BY THE QUENDA, *ISOODON OBESULUS*

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In the Perth area the Short-nosed Bandicoot, or Quenda *(Isoodon obesulus)* is found throughout the Darling Range and on the sandy coastal plain. Within this range it is abundant in both the wetter streambank habitats and in the drier forested regions of the hills. The Quenda is an active animal, and its presence in the latter habitat raises the question of what physiological and behavioural adaptations bandicoots possess to counteract the heat and dryness of the summer months.

Many mammals dig burrows as heat refuges, but the Quenda typically builds a mound-like nest of grass and litter. I have observed released animals taking refuge under the skirt of needle-like leaves surrounding low-growing Blackboys, and inspection of a number of these trees in the Roleystone area revealed scratchings underneath which suggested that they were frequented by bandicoots. Additionally, Troughton (1965) suggests that Quendas may use burrows made by other animals, but states that they do not dig their own. Heinsohn (1966), in an ecological study of the Quenda and *Perameles gunni* in the vicinity of Smithton and Stanley, Tasmania, did not report burrowing by either species, although he states that the Quenda does dig deep vertical food-holes. Calaby (1966) did not observe burrows of the closely-related *Isoodon macrourus* in north-eastern New South Wales.

It was therefore of interest to observe that a captive female Quenda held in the University Zoology Department yards was engaged in burrowing. This activity commenced with the onset of century temperatures on 1st February, 1967, and in the course of nine days the animal dug four burrows as I purposely destroyed each one. A fifth was dug on 17th February, a day of high humidity and moderately warm temperature. Three of the five burrows opened South, one opened North, and the other faced the East. Since the yard, some 10 feet by 12 feet and floored with sandy soil, is well-shaded, the orientation of the entrances is probably of no importance.

All five burrows were of similar construction, being 10 to 12 inches in length and angled so that the deepest point was about 7 inches below the surface. An exception was the fifth burrow, which was 15 inches long and of a gentler slope. The plate shows the shape of a typical entrance hole, which was 4 to 6 inches wide.

(The photograph was taken at an angle: the ruler and litter are resting on level ground.) When the Quenda occupied a burrow, she usually curled up with only her back facing the entrance. On two occasions her female young one, independent of the pouch for one month, was found in the burrow with her.

Entrance of a Quenda burrow. The animal is in the burrow, but is hidden by the shadow.

During part of the period of observation, a female Long-nosed Bandicoot *(Perameles nasuta,* from Sydney) shared the yard, but was not observed to dig burrows. On one occasion the disturbed *Perameles* ran to and entered an empty Quenda burrow, which it quickly left. Stodart (1966) stated that her captive Long-nosed Bandicoots used unoceupied rabbit burrows, and Heinsohn (1966) reported similar behaviour in wild *Perameles gunni.* However, when our *P. nasuta* was removed and put in a separate cage, it continued to build the typieal nests of this species deseribed by Troughton (1965), Calaby (1966), and Stodart (1966).

Measurements of air and burrow temperatures were taken on 9th February. The air temperature at 4 p.m., taken at 3 inches and 4 feet above the surface, was 34.0 deg. C. while the burrow temperature in the sand at a depth of 5 inches (halfway down the length of the burrow) was only 26.5 deg. It does seem, therefore, that burrowing is one way in which the Quenda may meet the stress of partieularly hot weather. As well, the position of the animal in the burrow would tend to reduee evaporative water loss in three ways:

1. by presenting minimal surfaee area to the outside.
2. by presenting a surfaee whieh has a low rate of water loss.
3. by maintaining a pocket of humid air within the burrow whieh would minimise water loss from the lungs.

The short burrows dug by this Quenda are of further interest because they bore no struetural resemblance to the nest. Although sufficient material was available for building nests, and the animal did build them as well as burrows, none of the five burrows were lined with litter or showed signs of having been hidden by litter. The shape of the entrances resembled that of the burrows dug by *Varanus,* and it is possible that Quenda burrows in the wild have been mistaken for the refuges of these reptiles. It is elearly desirable that it be determined if wild Quendas do dig

burrows and whether the occurrence of these is correlated with habitat and seasonal stress. Additionally, further observations should be made on captive animals, perhaps under experimentally-modified conditions. However, it seems unlikely that the present observations are anomalous, since Mr. Athol Douglas, of the Western Australian Museum, has informed me that Quendas in his possession have shown similar behaviour.

I am pleased to express my thanks to Dr. George Heinsohn, of the Zoology Department of the University of Western Australia, for permission to make these observations on bandicoots in his care; and to Professor A. R. Main and Mr. Robert Henzell for their helpful criticisms. The study was made while I held a National Science Foundation Graduate Fellowship (U.S.A.). The animal colony is supported by University funds and a CSIRO grant.

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NEPHRURUS STELLATUS,

A NEW KNOB-TAILED GECKO FROM SOUTHERN AUSTRALIA

By G. M. STORR, Western Australian Museum, Perth.

The genus *Nephrurus* occurs in the more arid parts of Australia. In Western Australia, one species *(vertebralis)* extends south to the north-eastern Wheat Belt, and another *(laevissimus)* just reaches the Eastern Goldfields (see map, Storr, 1963 : 86). No member of the genus was known from the intervening region (Merredin to Kalgoorlie) until the recent collection of a specimen east of Southern Cross. This specimen proved to belong to a new species which is otherwise represented by a single specimen from Eyre Peninsula, nearly a thousand miles to the east. For a loan of the latter, I am grateful to Mr. F. J. Mitchell (Curator of Reptiles, South Australian Museum).

The following description is based on the holotype. Where measurements and counts differ in the paratype, they are given in brackets. Differences in scalation and coloration are discussed under Variation.

Nephrurus stellatus sp. nov.

Holotype.—R 28363 in Western Australian Museum, collected by Miss Adrienne Douglas on 15 January 1967 at 41 miles E. of Southern Cross, Western Australia, in Lat. 31 deg. 25 min. S, Long. 120 deg. 00 min. E.

Paratype.—R 8392 in South Australian Museum, collected by M. Smyth on 10 October 1966 near the Hambidge Reserve, Eyre Peninsula, South Australia.